

12 **EUROPEAN PATENT APPLICATION**

21 Application number: 88115233.4

51 Int. Cl.<sup>5</sup>: H03M 3/02, H03G 9/02

22 Date of filing: 16.09.88

30 Priority: 25.09.87 US 101369

43 Date of publication of application:  
29.03.89 Bulletin 89/13

84 Designated Contracting States:  
**AT BE CH DE ES FR GB GR IT LI LU NL SE**

88 Date of deferred publication of the search report:  
05.09.90 Bulletin 90/36

71 Applicant: **DOLBY LABORATORIES LICENSING CORPORATION**  
100 Potrero Avenue  
San Francisco California 94103(US)

72 Inventor: **Mandell, Douglas Evan**  
625 Olima Street  
Sausalito Cal. 94965(US)

74 Representative: **Blumbach Weser Bergen  
Kramer Zwirner Hoffmann Patentanwälte  
Sonnenberger Strasse 100  
D-6200 Wiesbaden(DE)**

54 **Adaptive-filter single-bit digital encoder and decoder and adaptation control circuit responsive to bitstream loading.**

57 An adaptive single-bit encoder and decoder has its adaptive function determined by dynamically dividing the message frequency band into delta-sigma and delta modulation regimes of operation. In a practical embodiment this is accomplished by varying the corner frequency of a variable-frequency low-pass filter (14, 14') in a leaky integrator so that below the corner frequency the operation is that of delta-sigma modulation and above the corner fre-

quency the operation is that of delta modulation. An adaptation control circuit (18, 18') removes the clock signal component from the encoded bit stream to provide an analog signal representative of bit stream information or loading for use in generating the control signal. The analog signal is peak rectified (22, 22'), smoothed (24, 24'), and (optionally) non-linearly processed (26, 26') to provide the control signal.

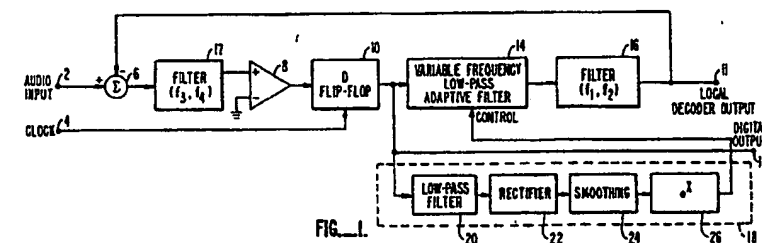


FIG. 1.

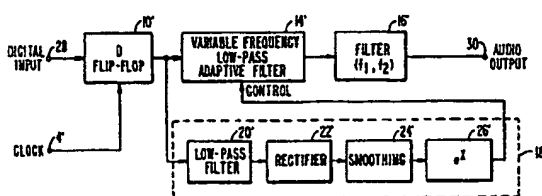


FIG. 2.



Application number  
EP 88 11 5233

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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.
- namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely:

1. Claims 1-27: Adaptive A-modulator in which the adaptive function is obtained by changing the corner frequency of the integrator.
2. Claims 28-32: Generation of control signals for adaptive delta-modulators in general.

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
- namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.

namely claims: 1-27

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